SCIENCE & EDUCATION
Impact
Benefits from USDA/Land-Grant Partnership

Border Crossing

States collaborate for common causes.

The best thing about flying over the United States is that you don't notice any state lines. Neither do pests, plant diseases or social issues. The USDA and land-grant university partnership forms multistate teams because solutions don't have borders either.

Payoff

- **The fruited plains.** The collaboration of **Arkansas, California, Colorado State, Georgia, Illinois, Purdue, Iowa State, Kentucky, Maine, Maryland, Massachusetts, Michigan State, Minnesota, Missouri, Rutgers University, Cornell, North Carolina State, Ohio State, Oregon State, Penn State, South Carolina State, Tennessee, Utah State, Vermont, Virginia Tech, Washington State** and **Wisconsin** researchers helped fruit growers in their states develop optimum root stocks. Yields increased by 20 percent as a result. Fruits were 10 percent larger and the fruits in the highest grade category increased by 20 percent. The financial benefit to U.S. fruit growers from earlier returns, higher yields and higher fruit quality was $200 million over five years.

- **The data game.** Land-grant universities work together to analyze and collect data that provides science-based information for local and national policy decisions. For instance, a collaborative study of the broad first-year benefits of switching to genetically modified, pest-resistant cotton in the United States showed a net world benefit of $240 million. America's farmers received 59 percent of the surplus, the developers and marketers of the technology got 26 percent of the benefits and consumers received 9 percent. The land-grant universities analyzing the data were **Auburn, Arizona, California, Florida, Georgia, Idaho, Illinois, Purdue, Iowa State, Maryland, Michigan State, Minnesota, Missouri, Nebraska, Cornell, North Dakota State, Texas A&M, Virginia Tech** and **Wisconsin.**

- **Teens don't get "Got Milk?"** Poor food choices early in life can lead to obesity, disease and brittle bones. Kids' calcium intake is well below the level set by the National Institute of Medicine. Research suggests that peak bone density can occur as early as age 16 for the hip and the early mid-20s for other bones. Direct care

RESEARCH, EXTENSION AND EDUCATION AT WORK

costs for fractures caused by osteoporosis were $18 billion in 2004, according to the U.S. Surgeon General. About 20 percent of hip fracture patients die within a year. **Arizona, California, Colorado State, Hawaii, Idaho, Purdue, Montana State, Nevada, New Mexico State, Utah State, Washington State, Wisconsin** and **Wyoming** developed information on what motivates or prevents kids from eating high-calcium foods and used the information in educational programs to increase calcium intake 20 percent among Asian, Hispanic and Caucasian youth. Only about 19 percent of younger adults eat the recommended number of servings of fruits and vegetables. Economically disadvantaged young adults, particularly women receiving food stamps, eat even fewer servings.

- **Fruits and vegetables left behind.** People who do not eat a variety of fruits and vegetables are also at higher risk for developing cancer, according to the National Cancer Institute**. Iowa State, Kansas State, Maine, Michigan State, Nebraska, Cornell, Oregon State, Rhode Island, South Dakota State, Wisconsin** and **Tuskegee** increased fruit and vegetable consumption by educating young adults across a broad range of income levels, but especially economically disadvantaged young adults. The group's findings are being tested on a nationally representative sample of about 1,000 young adults and with another targeted sample of more than 2,000 economically disadvantaged young adults.

- **Bugs without borders.** More than 85 percent of the nation's soybean crop is grown in the north-central United States. Soybean producers face up to 50 percent yield losses caused by soybean aphids. **Illinois, Iowa State, Kentucky, Minnesota, Missouri, Nebraska, North Dakota State, Ohio, South Dakota State** and **Wisconsin** have established predator insect colonies in U.S. quarantine laboratories that will specifically attack soybean aphids. Biological control of soybeans aphid can reduce the estimated 7 million acres of soybeans needing insecticide treatment in outbreak years. Effective biocontrols could save producers up to $1.7 billion dollars and reduce the environmental impact of pesticide use.

- **Western grain gains.** Cereal grains, particularly wheat and barley, are major cash crops throughout the western United States. **California, Colorado State, Kansas State, Minnesota, Montana State, Nebraska, Oregon State, South Dakota State, Texas, Utah State, Washington State** and **Wyoming** coordinated rapid responses to five emerging crop diseases: karnal bunt, High Plains disease, barley stripe rust, wheat stripe rust and Fusarium head blight. Following discovery of karnal bunt, the quick containment and ongoing monitoring of the disease in the Pacific Northwest allowed grain exports to continue moving out of the country. The western states group also provided Kansas scientists with germplasm for breeding new barley yellow dwarf virus-resistant winter wheat cultivars, which could save Kansas producers $13.4 million annually. The western states' research in improved resistance to the "eyespot" pathogen in winter wheat also led to a significant reduction in acres treated with fungicides to control this disease, saving Washington growers an estimated $5 million annually in reduced fungicide costs.

Cooperative State Research, Education, and Extension Service
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